RECOMBINANT PRION-LIKE GENES AND PROTEINS AND MATERIALS AND METHODS COMPRISING SAME

This application claims priority benefit of United States Provisional Application No. 60/138,833, filed June 9, 1999, incorporated herein by reference.

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FIELD OF THE INVENTION

The present invention relates generally to the fields of genetics and cellular and molecular biology. More particularly, the invention relates to amyloid or fibril-forming proteins and the genes that encode them, and especially to prion-like proteins and protein domains and the genes that encode them.

DESCRIPTION OF RELATED ART

Prions (protein infectious particles) have been implicated in both human and animal spongiform encephalopathies, including Creutzfeldt-Jakob Disease, kuru, Gerstmann-Strassler-Scheinker Disease, and fatal familial insomnia in humans; the recently-publicized "mad cow disease" in bovines; "scrapie," which afflicts sheep and goats; transmissible mink encephalopathy; chronic wasting disease of mule, deer, and elk; and feline spongiform encephalopathy. See generally S. Prusiner *et al., Cell, 93*: 337-348 (1998); S. Prusiner, *Science, 278*:245-251 (1997); and A. Horwich and J. Weissman, *Cell, 89*: 499-510 (1997). A currently-accepted theory is that a prion protein (PrP) can exist in at least two conformational states: a normal, soluble cellular form (PrP^{C}) containing little β-sheet structure; and a "scrapie" form (PrP^{Sc}) characterized by significant β-sheet structure, insolubility, and resistance to proteases. Prion particles comprise multimers of the PrP^{Sc} form. Prion formation has been compared and contrasted to amyloid fibril formation that has been observed in other disease states, such as Alzheimer's disease. See J. Harper & P. Lansbury, *Annu. Rev. Biochem, 66*: 385-407 (1997). More generally,